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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/728,393
Filing Date: December 04, 2003
Appellant(s): GENG, Z. JASON

Steven L. Nichols
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/24/2010 appealing from the Office action mailed 1/27/2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

2003/0235335	Yukhin	12/2003
5,014,121	Hasegawa	05/1991

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 32 – 36, 61, 62, and 65 - 72 are rejected under 35 U.S.C. 102(e) as being anticipated by Yukhin (US Patent Pub. # 2003/0235335).

As to claim 32, Yukhin (Figs. 4, 5, and 6) teaches a high speed 3D surface imaging camera comprising:

- a light projector (illuminating unit 401) for selectively illuminating an object, (Para 54) said light projector (401) being configured to project three sequential light beam projections having different colors (light source 510A-510N) and different spatially varying intensity patterns (SLMs 515A-515N) from said projector (401) onto said object (Para 54 and 60 – 63). Yukhin teaches control unit 402 may control the spatial structure of the projected patterns that is control unit 402 may control whether illuminating unit 401 illuminates objects in an area evenly or whether it projects a pattern onto the objects. Control unit 402 may also control temporal functions, such as the length of time or frequency of the illumination. In

addition, control unit 402 may also control spectral modulations, such as, for example, the wavelength of the generated light (Para 54). Yukhin teaches "N" hereinafter represents a variable (Para 60). Examiner analyzes the limitation "N" to mean 3. Yukhin teaches the SLMs 515A-515N may be used as code masks with, for example, patterns such as grids, or line structures and used for determining a pattern of light projected onto the object 560 (Para 63). Yukhin teaches the limitation "control unit 402 may also **control spectral modulations**". Examiner analyzes "spectral modulations" to be inherent to provide sequential red, blue, and green light per the control unit since this is a characteristic of light modulation such as LCD of display devices. Therefore Yukhin teaches the control unit controls the spectral range of light to be emitted by sequentially modulating a specific spectral range. Yukhin also teaches N images of the structured illumination distorted by the object surface are registered in different spectral ranges (Para 73). Examiner analyzes this also to mean the illuminating unit must sequentially provide light to provide N images of structured illumination having different spectral ranges.

- an image sensor (detector 642A – 642N) configured to receive reflected light from said object (object 695) and to generate three separate color image data sets (signal processor 660A – 660N) based on said three sequential differently colored (light source 510A-510N), variable intensity pattern light beam projections (SLMs 515A-515N) said three separate

color image data sets (660A – 660N) providing said 3D image data of said object (695) (Para 58, 66 – 68, and 75). Yukhin teaches the control unit 406 transmits timing and control signals to detecting unit 405 (Para 58). Yukhin teaches the resultant processed digital signal such as reconstructed 3D topology from signal processors 660A-660N may be accumulated in electronic unit 690. For example, processor 670 of electronic unit 690 may sum the signals received from each of signal processors 660A-660N to create an "overall" digital image (Para 75).

As to claim 33, Yukhin teaches the high speed 3D surface imaging camera of claim 32, wherein said image sensor comprises a plurality of charge-coupled device sensors (642A- 642N) (Para 68).

As to claim 34, Yukhin teaches the high speed 3D surface imaging camera of claim 33, wherein said plurality of CCD sensors (642A- 642N) comprises 3 CCD monochromic sensors (642A- 642N) (Para 68 and 73). Yukhin teaches additional lens 620A-620N may be located in each of the N channels formed by beam splitter 615 and project images of the structured illumination distorted by an object's surface onto detectors 642A-642N (Para 68). Examiner reads N channels to mean 3 CCD sensors. Yukhin teaches structured illumination using differing spectral ranges is used; each of the N spectral ranges is registered by at least one corresponding photoregistrar of identical spectral sensitivity. Examiner analyzes “N spectral ranges are registered by at least one corresponding photoregistrar” to mean each photoregistrar (Fig. 5 detector 642 and ADC 644) is monochromic and only reads a specific spectral range.

As to claim 35, Yukhin teaches the high speed 3D surface imaging camera of claim 32, further comprising a computing device (electronic unit 690) communicatively coupled to said image sensor (642A – 642N) wherein said computing device (690) is configured to combine said separate color image data sets (660A – 660N) into a composite Rainbow-type image of said object (Para 70 - 75). Yukhin teaches the resultant processed digital signal such as reconstructed 3D topology from signal processors 660A-660N may be accumulated in electronic unit 690. For example, processor 670 of electronic unit 690 may sum the signals received from each of signal processors 660A-660N to create an "overall" digital image (Para 75).

As to claim 36, Yukhin (Fig. 4 and 5) teaches a control unit (402) which produces sequential color projections comprises one of a rotatable color wheel, a deformable mirror, or a sequential RGB light emitting diode array (Para 53 and 54). The one or more light source 510A-510N can generate light of a different spectral range, for example, ranges of the ultraviolet, visible and infra-red spectra of electromagnetic radiation (Para 61). Yukhin teaches a signal processor 420 that controls the control unit 402 for the illuminating unit 401 and control unit 406 for the detecting unit 405. Yukhin teaches the illuminating unit 401 may be any suitable light-emitting device such as, for example, laser, light-emitting diode ("LED"), inert gas lamp, incandescent lamp or other working in visible, ultraviolet or infrared range. In certain embodiments, the illumination is provided by a flash or strobe light, which has a very short duration and consequently may be preferable when illuminating moving objects (Para 53).

As to claim 61, Yukhin teaches the high speed 3D surface imaging camera of claim 32, further comprising a computing device (electronic unit 690) communicatively coupled to said image sensor (642A – 642N), wherein said computing device (690) further comprises a mosaic means configured to combine said three separate color image data sets (660A – 660N) to form a multi-view 3D image of said object (Para 70 – 75).

As to claim 62, Yukhin teaches the high speed 3D surface imaging camera of claim 34, wherein each of said 3 CCD monochromatic sensors (642A - 642N) comprise a matched narrow-band spectral filter disposed in front of said CCD sensor (642A - 642N) (Para 72 and 73). Yukhin teaches each of the N spectral ranges is registered by at least one corresponding photoregistrar of identical spectral sensitivity. Digital images differ from another because of the adjustment of the spectral range (Para73). Yukhin teaches that each photoregistrar is registered to capture the corresponding spectral range. Examiner analyzes this to mean each photoregistrar is monochromatic, as cited above. Each photoregistrar is adjusted or filtered to a specific spectral range.

As to claim 65, Yukhin (Figs. 4, 5, and 6) teaches a 3D imaging camera comprising:

- a light projector (illuminating unit 401) for selectively illuminating an object, (Para 54) said light projector (401) being configured to project a number of sequential light beam projections having different wavelengths (light source 510A-510N) and different spatially varying intensity patterns (SLMs 515A-515N) from said projector (401) onto said object (Para 54 and 60 –

63). Yukhin teaches control unit 402 may control the spatial structure of the projected patterns that is control unit 402 may control whether illuminating unit 401 illuminates objects in an area evenly or whether it projects a pattern onto the objects. Control unit 402 may also control temporal functions, such as the length of time or frequency of the illumination. In addition, control unit 402 may also control spectral modulations, such as, for example, the wavelength of the generated light (Para 54). Yukhin teaches "N" hereinafter represents a variable (Para 60). Examiner analyzes the limitation “N” to mean a number. Yukhin teaches the SLMs 515A-515N may be used as code masks with, for example, patterns such as grids, or line structures and used for determining a pattern of light projected onto the object 560 (Para 63). Yukhin teaches the limitation “control unit 402 may also **control spectral modulations**”. Examiner analyzes “spectral modulations” to be inherent to provide sequential red, blue, and green light per the control unit since this is a characteristic of a light modulation such as LCD is used to provide R, G, B light source. Therefore Yukhin teaches the control unit controls the spectral range of light to be emitted by sequentially modulating a specific spectral range. Yukhin also teaches N images of the structured illumination distorted by the object surface are registered in different spectral ranges (Para 73). Examiner analyzes this also to mean the

illuminating unit must sequentially provide light to provide N images of structured illumination having different spectral ranges.

- an image sensor (detector 642A – 642N) configured to receive reflected light from said object (object 695) and to generate a number of separate color image data sets (signal processor 660A – 660N) based on said a number of sequential differently colored (light source 510A-510N), variable intensity pattern light beam projections (SLMs 515A-515N) said three separate color image data sets (660A – 660N) providing said 3D image data of said object (695) (Para 58, 66 – 68, and 75). Yukhin teaches the control unit 406 transmits timing and control signals to detecting unit 405 (Para 58). Yukhin teaches the resultant processed digital signal such as reconstructed 3D topology from signal processors 660A-660N may be accumulated in electronic unit 690. For example, processor 670 of electronic unit 690 may sum the signals received from each of signal processors 660A-660N to create an "overall" digital image (Para 75).

As to claim 66, Yukhin teaches the 3D imaging camera claim 65, in which said light projector (401) is further configured to project light beams in the near infrared spectrum (infrared range), and said image sensor (642A – 642N) is further configured to receive light in the near infrared spectrum (Para 53 and 73). Yukhin teaches structured illumination using differing spectral ranges (infrared spectrum) is used, each of the N spectral ranges is registered by at least one corresponding photoregistrar (640A – 640N) of identical spectral sensitivity (Para 73).

As to claim 67, Yukhin teaches the 3D imaging camera claim 65, in which said image sensor (642A – 642N) is configured to receive said number of sequential light beam projections (510A-510N) sequentially within a single frame cycle (Para 95). Yukhin teaches the system can continuously capture 3D images at a fast rate; the probability of error is low and decreases as the number of frames taken increases.

As to claim 68, Yukhin teaches the 3D imaging camera claim 65, in which said image sensor (642A – 642N) comprises a number of charge-coupled device (CCD) sensors (Para 55).

As to claim 69, Yukhin teaches the 3D imaging camera claim 68, in which said CCD sensors (642A- 642N) comprises monochromatic CCD sensors (642A- 642N) (Para 68 and 73). Yukhin teaches additional lens 620A-620N may be located in each of the N channels formed by beam splitter 615 and project images of the structured illumination distorted by an object's surface onto detectors 642A-642N (Para 68). Examiner reads N channels to mean 3 CCD sensors. Yukhin teaches structured illumination using differing spectral ranges is used; each of the N spectral ranges is registered by at least one corresponding photoregistrar of identical spectral sensitivity. Examiner analyzes “N spectral ranges are registered by at least one corresponding photoregistrar” to mean each photoregistrar (Fig. 5 detector 642 and ADC 644) is monochromic and only reads a specific spectral range (Para 73).

As to claim 70, Yukhin teaches the 3D imaging camera claim 65, further comprising a computing device (electronic unit 690) communicatively coupled to said image sensor (642A – 642N) in which said computing device (690) is configured to

combine said separate image data sets (660A – 660N) into a composite Rainbow-type image of said object(695) (Para 70 – 75). Yukhin teaches the resultant processed digital signal such as reconstructed 3D topology from signal processors 660A-660N may be accumulated in electronic unit 690. For example, processor 670 of electronic unit 690 may sum the signals received from each of signal processors 660A-660N to create an "overall" digital image (Para 75).

As to claim 71, Yukhin teaches the 3D imaging camera claim 68, in which each of said charge-coupled device (CCD) sensors (642A - 642N) comprise a matched narrow-band spectral filter (beam splitter 615) disposed in front of said CCD sensor (642A - 642N) (Para 72 and 73). Yukhin teaches structured illumination using differing spectral ranges is used, each of the N spectral ranges is registered by at least one corresponding photoregistrar of identical spectral sensitivity (Para 73). Thus, each image of the structured illumination distortions, formed by heterogeneities of a shape of the object surface, is registered in at least one channel of at least one multi-channel unit of image registration and processing.

As to claim 72, Yukhin teaches the 3D imaging camera claim 68, in which each of said number of sequential light beam projections (510A-510N) projects light in a unique spectrum band (visible, ultraviolet or infrared range) corresponding to one of said charge-coupled device (CCD) sensors (642A – 642N) (Para 53 and 73). Yukhin teaches structured illumination using differing spectral ranges (infrared spectrum) is used, each of the N spectral ranges is registered by at least one corresponding photoregistrar (640A – 640N) of identical spectral sensitivity (Para 73).

Claim 73 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yukhin (US Patent Pub. # 2003/0235335) in view of Hasegawa (US Patent # 5,014,121).

As to claim 73, note the discussion above. Yukhin does not specifically teach light beam projections each of a different color within the visible spectrum. Hasegawa (Fig. 1) teaches the sequential color projections (filter disk 8) from said projector (9) project onto said object to be photographed. Hasegawa shows in figure 4 the filter disc (8) is constructed in such a way that filters 8a, 8b and 8c having such spectral transmittances as will transmit there through only R light, only G light and only B light, respectively, are arranged at an equal interval from each other on a same circumference (Col. 5, line 65 – Col. 6, line 13). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided filter disk as taught by Hasegawa to the illuminating unit of Yukhin, to provide an image pickup device which eliminates degradation of the integrated color image brought about by chromatic aberration of the images for the respective colors (Col. 1, lines 65 - 68 of Hasegawa).

(10) Response to Argument

First in regards to claim 32, Appellant argues Yukhin (US Patent Publication No. 2003/0235335) reference does not teach the limitation of “three sequential light beam

projections having different colors" (See Section VII Arguments, pg 9). The Examiner respectfully disagrees. Specifically, noting the Yukhin reference teaches:

- one or more light source 510A-510N can generate light of a different spectral range, for example, ranges of the ultraviolet, visible and infra-red spectra of electromagnetic radiation. Thus, in one such embodiment, light from **one to N spectral ranges** may be projected on object 560 from the exemplary illuminating unit (Para 61).
- light sources 510A-510N project light of similar spectral ranges and spatial light modulators (SLM) 515A-515N act as spectral filters of different spectral ranges, such that light from **one to N spectral ranges** may be projected on object 560 from the exemplary illuminating unit (Para 62).
- digital images differ from another because of the **adjustment of the spectral range** (Para 73).

On page 9 of the Appeal (Section VII) the Appellant argues that Yukhin using radiation from different spectral ranges and does not teach or suggest the claimed light projector configured to project “three sequential light beam projections having different **colors**”. Rather, Yukhin teaches using a light source in each of the ultraviolet, visible, and infrared spectra, not three different colors as claimed. Appellant further defines the word “color” in the appeal on page 10 of Section VII.

Examiner disagrees that the Yukhin reference requires a light source in each of the ultraviolet, visible, and infrared spectra. Yukhin teaches a light from **one to N spectral ranges** may be projected on object 560. Examiner analyzes “one or more

light source 510A-510N can generate light of a different spectral range, for example, ranges of the ultraviolet, visible and infra-red spectra of electromagnetic radiation. Thus, in one such embodiment, light from **one to N spectral ranges** may be projected on object 560 from the exemplary illuminating unit" to mean the N spectral ranges (narrow bands of wavelengths) can be within one of the three ranges (ultraviolet, visible and infra-red). Yukhin teaches the system could have a light source for each color range listed above in the table. For example the table below shows the typical spectral range (wavelength) for a specific color. Each of the below colors has a specific spectral range.

Color	Wavelength (in nanometers nm)
Infrared	>1000 nm
Red	700-635 nm
Orange	635-590
Yellow	590-560
Green	560-490 nm
Blue	490-450 nm
Violet	450-400 nm
Ultraviolet	<300 nm

It should be noticed that Red, Green or Blue light has spectral ranges 700-635nm, 560-490nm or 490-400nm, respectively.

For this reason, the Examiner believes that Yukhin does teach the limitation of claim 32 and 65.

Secondly in regards to claims 32 and 65, Appellant argues Yukhin (US Patent Publication No. 2003/0235335)reference does not teach the limitation of “three **sequential** light beam projections having different colors" (See Section VII arguments, pg 10). The Examiner respectfully disagrees. Specifically noting the Yukhin reference teaches the control unit 402 may also **control temporal functions, such as the length of time or frequency of the illumination**. In addition, control unit 402 may also **control spectral modulations**, such as, for example, the wavelength of the generated light (Para 54). Temporal is defined as “of or relating to the sequence of time or to a particular time**:** Chronological” (http://www.merriam-webster.com/dictionary/temporal). Chronological is defined as “of, relating to, or arranged in or according to the order of time” (http://www.merriam-webster.com/dictionary/chronological). Examiner analyzes the limitation “control unit 402 may also control temporal functions, such as the length of time or frequency of the illumination” to mean sequentially turning on each illuminating unit. Yukhin also teaches one or more spectral filters may be oriented within the illuminating unit for filtering light based on spectral range prior to its projection on object 560 (Para 62). Examiner analyzes this to mean a color wheel with a plurality of color filters arranged around the outer perimeter of the wheel and the control unit controlling the timing of the illumination. Also Yukhin teaches the limitation “control unit 402 may also **control spectral modulations**”. Examiner analyzes the limitation “spectral modulations” to be inherent to provide sequential red, blue, and green light per the

control unit. Therefore Yukhin teaches the control unit controls the spectral range of light to be emitted by sequentially modulating a specific spectral range. Yukhin also teaches N images of the structured illumination distorted by the object surface are registered in different spectral ranges (Para 73). Examiner analyzes this also to mean the illuminating unit must sequentially provide light to provide N images of structured illumination having different spectral ranges. For this reason, the Examiner believes that Yukhin does teach the limitation of claim 32 and 65.

In regards to claims 34, Appellant argues Yukhin (US Patent Publication No. 2003/0235335) reference does not teach the limitation of “wherein said plurality of CCD sensors comprises 3 CCD monochromatic sensors" (See Section VII arguments, pg 14). The Examiner respectfully disagrees. Specifically noting the Yukhin reference teaches the detectors 642A-642N may be one or more of, for example, CCDs, CMOSs, or any other suitable sensor array detecting device (Para 68). Yukhin also teaches N images of the structured illumination distorted by the object surface are registered in different spectral ranges (Para 73). As cited above the Examiner analyzes the limitation “spectral ranges” to include ranges with in the infrared, visible and ultraviolet spectral range. Yukhin teaches multiple detectors to capture a specific spectral range. For this reason, the Examiner believes that Yukhin does teach the limitation of claim 34.

In regards to claims 35, Appellant argues Yukhin (US Patent Publication No. 2003/0235335) reference does not teach the limitation of “configured to combine said separate color image data sets into a composite Rainbow-type image of said object" (See Section VII arguments, pg 14 and 15). The Examiner respectfully disagrees.

Specifically noting the Yukhin reference teaches processed digital signal such as reconstructed 3D topology from signal processors 660A-660N may be accumulated in electronic unit 690. For example, processor 670 of electronic unit 690 may sum the signals received from each of signal processors 660A-660N to create an "overall" digital image (Para 75). Examiner analyzes this to mean each detector captures an image of a specific spectral range. The image is processed by the signal processor and transmitted to the processor, where the image is added to the other (N) images to create a 3D multi colored image. Appellant defines the term "Rainbow-type image" or "Rainbow-type camera" is meant to be understood as an image or a camera configured to collect an image that may be used to form a three-dimensional image according to the triangulation principles (Para 26 of the Specification). Yukhin teaches the present invention, the principles of structured illumination, tomography, stereo-photogrammetry, range finding and triangulation combined with computerized image recognition may be used in a 3D recognition and surveillance security system (Para 31). Examiner analyzes Yukhin to be consistent with the definition within the Appellant's Specification. For this reason, the Examiner believes that Yukhin does teach the limitation of claim 35.

In regards to claims 61, Appellant argues Yukhin (US Patent Publication No. 2003/0235335) reference does not teach the limitation of “a computing device communicatively coupled to said image sensor, wherein said computing device further comprises a mosaic means configured to combine said three separate color image data sets to form a multi-view 3D image of said object" (See Section VII arguments, pg 15 and 16). The Examiner respectfully disagrees. See discussion above in regards to

claim 35 and 32. For this reason, the Examiner believes that Yukhin does teach the limitation of claim 61.

In regards to claims 62, Appellant argues Yukhin (US Patent Publication No. 2003/0235335) reference does not teach the limitation of “wherein each of said 3 CCD monochromatic sensors comprise a matched narrow-band spectral filter disposed in front of said CCD sensor" (See Section VII arguments, pg 16). The Examiner respectfully disagrees. Specifically noting the Yukhin reference teaches the Lens 610 directs the light to beam splitter 615, which reflects the light toward one or more additional lens 620A-620N. The light passes through the one or more lens 620a-620n and is registered by one or more photoregistrars 640A-640N (Para 72). Beam splitter is defined as “a mirror or prism or a combination of the two that is used to divide a beam of radiation into two or more parts” (http://www.merriam-webster.com/dictionary/beam splitter). Prism is defined as a transparent body that is bounded in part by two nonparallel plane faces and is used to refract or disperse a beam of light (http://www.merriam-webster.com/dictionary/prism). A beam splitter is a dichroic mirrored prism assembly which uses dichroic optical coatings to split the incoming light into three beams, one each of red, green, and blue. Examiner analyzes the limitation “beam splitter” to include a dichroic mirrored prism to separate the one to N spectral ranges. For this reason, the Examiner believes that Yukhin does teach the limitation of claim 62.

In regards to claims 73, Appellant argues Yukhin (US Patent Publication No. 2003/0235335) in view of Hasegawa (US Patent # 5,014,121) reference does not teach

the limitation of “wherein said light projector is configured to project three sequential light beam projections each of a different color within **the visible spectrum**" (See Section VII arguments, pg 16). The Examiner respectfully disagrees. Specifically noting the Yukhin reference teaches:

- one or more light source 510A-510N can generate light of a different spectral range, for example, ranges of the ultraviolet, visible and infra-red spectra of electromagnetic radiation. Thus, in one such embodiment, light from **one to N spectral ranges** may be projected on object 560 from the exemplary illuminating unit (Para 61).
- light sources 510A-510N project light of similar spectral ranges and spatial light modulators (SLM) 515A-515N act as spectral filters of different spectral ranges, such that light from **one to N spectral ranges** may be projected on object 560 from the exemplary illuminating unit (Para 62).
- digital images differ from another because of the **adjustment of the spectral range** (Para 73).

On page 9 of the Appeal (Section VII) the Appellant argues that Yukhin using radiation from different spectral ranges and does not teach or suggest the claimed light projector configured to project “three sequential light beam projections having different **colors**”. Rather, Yukhin teaches using a light source in each of the ultraviolet, visible, and infrared spectra, not three different colors as claimed. Appellant further defines the word “color” in the appeal on page 10 of Section VII.

Examiner disagrees that the Yukhin reference requires a light source in each of the ultraviolet, visible, and infrared spectra. Yukhin teaches a light from **one to N spectral ranges** may be projected on object 560. Examiner analyzes “one or more light source 510A-510N can generate light of a different spectral range, for example, ranges of the ultraviolet, visible and infra-red spectra of electromagnetic radiation. Thus, in one such embodiment, light from **one to N spectral ranges** may be projected on object 560 from the exemplary illuminating unit” to mean the N spectral ranges (narrow bands of wavelengths) can be within one of the three ranges (ultraviolet, visible and infra-red). Yukhin teaches the system could have a light source for each color range listed above in the table. For example the table below shows the typical spectral range (wavelength) for a specific color. Each of the below colors has a specific spectral range.

Color	Wavelength (in nanometers nm)
Infrared	>1000 nm
Red	700-635 nm
Orange	635-590
Yellow	590-560
Green	560-490 nm
Blue	490-450 nm
Violet	450-400 nm
Ultraviolet	<300 nm

Yukhin reference does not specifically teach the one to N spectral ranges have to be in the visible light spectrum. Hasagawa reference teaches an image pickup device suitable especially for endoscopes or the like, which is arranged to use a solid state image sensor to pick up an image of an object formed by an image-forming lens and to perform color display of this image. Hasegawa shows in figure 4 the filter disc (8) is constructed in such a way that filters 8a, 8b and 8c having such spectral transmittances as will transmit there through only R light, only G light and only B light, respectively, are arranged at an equal interval from each other on a same circumference (Col. 5, line 65 - Col. 6, line 13). It would be obvious to replace the filter disc (8) of Hasagawa to the illuminating unit (401) of Yukhin. Yukhin allows N spectral ranges to include the spectral ranges in the infrared and ultraviolet spectrum. Hasegawa would produce an illumination according to the spectral transmittances filter of only the specific visible light. Hasagawa reference was used to teach only an illumination unit which provided visible light spectrum only. Yukhin provides the system to form a 3D image as cited above. For this reason, the Examiner believes that Yukhin in view of Hasagawa do teach the limitation of claim 73.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/CHRISTOPHER K. PETERSON/

Examiner, Art Unit 2622

Conferees:

/TUAN HO/

Primary Examiner, Art Unit 2622

/Sinh Tran/

Supervisory Patent Examiner, Art Unit 2622